junction (5) for forming an active region (10) in the junction (5), the first electrical contact (6) defining an outline area (12) on the semi-conductor medium (2) for determining the shape and area of the active region (10), and defining an actual contact area (17) in which the first electrical contact (6) is in actual electrical contact with the semi-conductor medium (2), and defining non contact areas (21) within the outline area (12) in which no electrical contact takes place between the first contact (6) and the semi-conductor medium (2), the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) varying within the outline area (12) for varying the current density spatially in the active region (10), wherein the first electrical contact (6) comprises:

a main elongated electrical contact (15) extending substantially longitudinally relative to the active region (10), and

a plurality of spaced apart elongated secondary electrical contacts (16) electrically connected to the main contact (15), and extending from the main contact (15) in a direction generally transversely of the active region, the secondary contacts (16) and the main contact (15) together forming the actual contact areas (17) and co-operating for defining the non-contact areas (21).

62. A semi-conductor device as claimed in Claim 61 in which the secondary contacts (16) are provided by respective elongated spaced apart substantially parallel finger contacts tapering from their respective proximal ends (19) to their distal ends (18).

63. A semi conductor device as claimed in Claim 61 in which the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) formed by the first electrical

contact (6) is varied in proportion to the desired variation in current density in the active region (10), and is varied in a direction in which the current density is to be varied in the active region (10).

64. A semi-conductor device as claimed in Claim 61 in which the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) defined by the first electrical contact (6) is progressively reduced in a transverse direction across the active region (10) relative to the longitudinal direction (11) of the active region (10) towards respective opposite side edges (13,14) of the active region (10) which extend in a generally longitudinal direction relative to the active region (10) for progressively reducing the current density in the active region (10) towards the respective side edges (13,14).

65. A semi-conductor device as claimed in Claim 61 in which the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) defined by the first electrical contact (6) is varied in a direction longitudinally relative to the longitudinal direction (11) of the active region (10).

66. A semi-conductor device as claimed in Claim 61 in which the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) defined by the first electrical contact (6) is arranged in a direction generally transversely of the direction in which the ratio of the respective areas is varying for maintaining the current density in the active region (10) substantially constant along lines of constant current density which extend in a direction generally transversely of the direction in which the ratio of the respective areas is being varied.

67. A semi-conductor device as claimed in Claim 61 in which the shape and area of the non-contact areas (21) is such that the current density in areas of the active region (10) which correspond to the non-contact areas (21) is greater than zero.

68. A semi-conductor device as claimed in Claim 61 in which the shape and area of the non-contact areas (21) is such as to avoid induced grating effects in the profile of the current density in the active region (10).

69. A semi-conductor device as claimed in Claim 61 in which the shape and the area of the non-contact areas (21) is such as to induce predetermined grating effects in the active region (10).

70. A semi-conductor device as claimed in Claim 61 in which the junction (5) defined by the semi-conductor medium is a p-n junction (5).

71. A semi-conductor device as claimed in Claim 61 in which the first and second electrical contacts (6,7) are located on respective opposite surfaces (8,9) of the semi-conductor device (2) for pumping the current through the active region (10) of the junction (5).

72. A semi-conductor device as claimed in Claim 61 in which the semi-conductor device (2) is an optical semi-conductor device, the longitudinal direction (11) of the active region (10) being defined by the direction of light propagation in the active region (10).

73. A semi-conductor device as claimed in Claim 72 in which the ratio of the area of the actual contact area (17) to that of the non contact areas (21) defined by the first electrical contact (6) is varied for inducing a current density profile (26) in the active region (10) which substantially coincides with the desired light intensity profile (25) in the active region (10).

74. A semi-conductor device as claimed in Claim 61 in which the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) defined by the first electrical contact (6) is varied transversely across the direction (11) of light propagation in the active region (10) for inducing a current density in the active region (10) the transverse profile (26) of which substantially coincides with the desired transverse profile of light intensity (25) at the corresponding location of the active region (10).

75. A method for spatially varying the current density in an active region (10) of a junction (5) defined by a semi-conductor medium (2) of a semi-conductor device (1), the method comprising the steps of:

placing a first electrical contact (6) and a second electrical contact (7) at spaced apart locations from each other on the semi-conductor medium (2), and in electrical contact with the semi-conductor medium (2) for pumping current through the junction (5) for forming the active region (10), the first electrical contact (6) defining an outline area (12) on the semi-conductor medium (2) for determining the shape and area of the active region (10), and the first electrical contact (6) defining an actual contact area (17) in which the first electrical contact (6) is in actual electrical contact with the semi-conductor medium (2), and defining non-contact areas (21) within the outline area (12) in which no electrical contact takes place between the first contact (6) and the semi-conductor medium (2), the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) varying within the outline area (12) for varying the current density spatially in the active region (10), wherein the first electrical contact (6) comprises:

a main elongated electrical contact (15) extending substantially longitudinally relative to the active region (10), and

a plurality of spaced apart elongated secondary electrical contacts (16) electrically connected to the main contact (15), and extending from the main contact (15) in a direction generally transversely of the active region, the secondary contacts (16) and the main contact (15) together forming the actual contact areas (17) and co-operating for defining the non-contact areas (21).

76. A method as claimed in Claim 75 in which the secondary contacts (16) are provided by respective elongated spaced apart substantially parallel finger contacts tapering from their respective proximal ends (19) to their distal ends (18).

77. A method as claimed in Claim 75 in which the ratio of the area of the actual contact area (17) to that of the non contact areas (21) defined by the first electrical contact (6) is varied as a function of the desired variation in the current density in the active region (10).

78. A method as claimed in Claim 75 in which the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) defined by the first electrical contact (6) is varied in proportion to the desired variation in current density in the active region (10).

79. A method as claimed in Claim 75 in which the ratio of the area of the actual contact area (17) to that of the non contact areas (21) defined by the first electrical contact (6) is varied in a direction in which the current density is to be varied in the active region (10).

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80. A method as claimed in Claim 75 in which the ratio of the area of the actual contact area (17) to that of the non-contact areas (21) defined by the first electrical contact (6) is progressively varied for progressively varying the current density in the active region (10).--